

REMARKS

Claims 1-9, 11, 13, and 15-29 are pending in the application. Claims 1-9, 11, 13, and 15-20 have been withdrawn from the application as being directed to a non-elected invention. Therefore, claims 21-29 are at issue.

Claim 21 has been amended to recite that the base polymer A has a deagglomerating assistant added to it in an amount of up to 0.01% by weight. The amendment to claim 21 is supported by the specification at page 5, lines 36-38. Claim 27 has been amended to delete redundant subject matter.

The present claims recite a water-absorbing polymer having (a) saline flow conductivity (SFC) of not less than $80 \times 10^{-7} \text{ cm}^3 \text{ s/g}$ and (b) not less than 80% by weight of particles between 150 and 600 μm in size. Independent claim 21 also recites that the water-absorbing polymer has 0.01% to 0.5%, by weight, surface postcrosslinker, 0.001% to 0.5%, by weight, of at least one polyvalent cation, and up to 0.01%, by weight, of a deagglomerating agent. As claimed, the water-absorbing polymer is prepared by mixing a solution of the surface crosslinker and a solution of the polyvalent cation with a base polymer, wherein the two solutions are metered wholly or partly concurrently through separate nozzles.

Claims 21-29 stand rejected under 35 U.S.C. §103 as being obvious over Frenz et al. U.S. Patent Publication No. 2002/0128618 ('618 publication) in view of Hermeling et al. U.S. Patent Publication No. 2005/0265387 ('387 publication). The basis of the rejection is that the '618 publication discloses a neutralized polyacrylic acid polymer, classified to 100-850 μm , and treated with an organic crosslinking agent and aluminum sulfate, and that the '387 publication discloses balancing properties to achieve a desired absorption, thereby rendering the present claims obvious. Applicants traverse this rejection.

The '618 publication discloses pre-selecting a swellable base polymer (such as Example 1 of the '618 publication), then coating the pre-selected base polymer with steric or electrostatic spacers (as in Example 5 of the '618 publication). According to Examples 1 and 5, the polymer is classified to 100-850 μm , the organic crosslinking agent is applied first and cured (Example 1), followed by mixing with aluminum sulfate (Example 5).

As correctly stated by the examiner, the '618 publication fails to disclose the particle size distribution recited in claim 21, i.e., not less than 80% by weight of particles between 150 and 600 μm in size. The '618 publication also fails to teach or suggest the addition of a deagglomerating assistant in an amount of up to 0.01%, by weight (claim 21), or in an amount such that the surface tension of an aqueous extract is at least 0.065 N/m (claim 27).

The proper basis to establish an obviousness rejection under 35 U.S.C. §103 is set forth at pages 9-11 of Amendment "A" filed May 17, 2010. That basis is not reiterated here for the sake of brevity, but is incorporated herein by reference. However, and importantly, the prior art references must teach or suggest *all* the limitations of the claims. In *re Wilson*, 165 USPQ 494, 496 (C.C.P.A. 1970). In addition, applicants respectfully note that MPEP §§2142 and 2143 require that the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicants' disclosure. *In re Vaeck*, 947 F.2d 4899 (Fed. Cir. 1991).

Fist, in the Office Action, the examiner admits that the references do not disclose, or suggest, a deagglomeration assistant, which is positively recited in independent claim 21. The examiner *incorrectly* states that the final product of claim 27 is not required to contain a deagglomerating assistant. To the contrary, claim 27 recites that the deagglomerating agent is metered to an extent such that the surface tension of an aqueous extract of the swollen water-absorbing polymer is at least 0.065 N/m at 20°C. The surface tension of pure water at 20°C is 0.073 N/m. Accordingly, the deagglomerating assistant must be present. This feature is clarified by the amendment to claim 21. It further must be noted that the scope of the claims is not broad, notably with respect to the amount of deagglomerating assistant and a surface tension range of at least 0.065 to less than 0.073 N/m.

Further, and as stated above, the '618 publication discloses surface postcrosslinking a base polymer (Example 1), then coating the postcrosslinked polymer particles with aluminum sulfate. Treatment with the aluminum salt improves the SFC (compare Example 1 to Example 5). The particles of the '618 publication have a particle size distribution of 100-850 μm ('618 publication, paragraph [0123]).

At paragraph [0013], the '618 publication teaches that SFC increases with increasing particle size. This explicit teaching leads persons skilled in the art to using larger sized particles in order to improve SFC.

At paragraph [0006], the '618 publication also teaches that Absorbency Under Load (AUL) is increased by surface crosslinking. The '618 patent therefore teaches two independent methods of improving absorption properties, i.e., surface crosslinking and increased particle size. Conversely, the '618 publication leads persons skilled in the art away from decreasing particle size.

Independent claim 21 recites a relatively high SFC *and* a small particle size of at least 80%, by weight, between 150 and 600 μm , when the particles are prepared by the claimed process. This is in direct contrast to the explicit teachings of the '618 publication and is unexpected in the art. After reading the '618 publication, a person skilled in the art would have had no incentive to reduce particle size with any reasonable expectation of providing a high SFC value. After reading the '618 publication, a skilled person would have at least maintained the particle size disclosed in the '618 publication. In fact, rather than considering reducing particle size to improve absorption (which is contrary to common knowledge in the art), the '618 publication teaches a skilled person an alternative method, i.e., surface postcrosslinking.

In summary, an increase in SFC and a decrease in particle size are conflicting parameters with respect absorption properties. It is applicants that were able to provide a high SFC at smaller particle sizes, contrary to common knowledge in the art. The '618 publication fails to disclose the claimed particle size range, and persons skilled in the art would have had no incentive to reduce particle size in view of the explicit teachings of the '618 publication, i.e., that reducing particle size *adversely effects* SFC.

The '387 publication fails to overcome the deficiencies of the '618 publication, but rather re-enforces applicants' arguments. The '387 publication is directed to swellable polymers having a specific particle size distribution. In particular, the '387 publication is directed to swellable polymer particles of less than 250 μm having an increased swell rate. The '387 publication also teaches that SFC and Performance under Pressure (PUP) are

dependent on particle size (see paragraph [0021]). PUP is related to AUL as disclosed in paragraph [0020] of the '387 publication.

In particular, paragraph [0022] of the '387 publication teaches that SFC increases with increasing particle size distribution (as also taught in the '618 publication), and that PUP (i.e., AUL) decreases with increasing particle size. The table between paragraph [0021] and [0022] of the '387 publication shows that particle size has a *substantial* effect on SFC, but a *minimal* effect on PUP. Further, the '387 publication teaches that improving absorption properties is "to shift the particle size spectrum to higher values" (paragraph [0023]). The '387 publication also teaches that the desired high absorption values (paragraph [0024]) are achieved by increasing crosslink density on the surface or within the polymer particle (paragraph [0025]). The '387 publication therefore provides teachings identical to the '618 publication with respect to improving properties, i.e., large particle size to improve SFC and surface postcrosslinking.

The '618 publication and '387 publication *each* teach that SFC is adversely affected by reducing particle size distribution. The two references also teach alternative and independent ways to improve absorption properties *without* adversely effecting SFC, i.e., crosslink density and larger particle sizes.

Persons skilled in the art therefore would have had no incentive to reduce particle size distribution with any reasonable expectation of maintaining a high SFC value. In fact, the combination of references leads persons in art away from a smaller particle sizes. It is submitted that rather than proceeding in direct contrast to the teachings of the references (and common knowledge in the art), persons skilled in the art would have followed one of the alternative methods disclosed in the references to improve absorption properties.

In view of the above, it is submitted that claims 21-29 would not have been obvious over the '618 publication in view of the '387 publication under 35 U.S.C. §103, and that the rejection should be withdrawn.

All pending claims are now in a form and scope for allowance. An early and favorable action on the merits is respectfully requested.

Should the examiner wish to discuss the foregoing, or any matter of form in an effort to advance this application toward allowance, the examiner is urged to telephone the undersigned at the indicated number.

Dated: December 1, 2010

Respectfully submitted,

By 

James J. Napoli

Registration No.: 32,361
MARSHALL, GERSTEIN & BORUN LLP
233 S. Wacker Drive
6300 Willis Tower
Chicago, Illinois 60606-6357
(312) 474-6300
Attorney for Applicant